AIR COMPRESSOR WITH IMPROVED HAND PORTABILITY

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation-in-part of U.S. Patent Application Serial No. 10/630,090 filed July 30, 2003, which is a continuation of U.S. Patent Application Serial No. 10/154,416 filed May 23, 2002. U.S. Patent Application Serial No. 10/154,416 claimed the benefit of U.S. Provisional Application No. 60/366,676, filed March 22, 2002 and is a continuation-in-part of U.S. Application Serial No. 29/136,877 filed February 8, 2001. U.S. Application Serial No. 29/136,877 issued as U.S. Design Patent No. D461,196 on August 6, 2002.

FIELD OF THE INVENTION

[0002] The present invention generally relates generally to the field of portable air compressors and more particularly to hand portable air compressors with improved portability and ruggedness.

BACKGROUND OF THE INVENTION

[0003] Small air compressors have become common tools around the home, workshop and work site. For home, recreation and other light duty uses such as inflating sports or recreation equipment or for emergency use in inflating a car tire a number of very small and lightweight compressors are available. Such tasks require relatively low-pressure compressed air and/or relatively low airflow rates. Weight is kept low and portability is maximized in these designs by

use of small, low volume and/or low-pressure compressors powered by small lightweight electric motors. Additionally, significant weight, size and cost savings are achieved by the omission of a high-pressure vessel (i.e., air tank), as well as an oil lubrication system.

[0004] Many jobs, however, require higher air pressures, and/or greater instantaneous air flow demands which typically exceed the capacity of the hobby or recreational use compressors. To satisfy the demands of higher air pressure and higher airflow tasks it is necessary to increase the size of the compressor and the related motor or engine. Furthermore, rather than sizing the compressor to meet the maximum theoretical instantaneous air flow demand, it is common design practice to include a compressed air reservoir in the form of an air tank or other pressure vessel. The tank, usually with an output regulator, can hold a quantity of pressurized air to meet peak demands from serviced loads, while allowing the use of a smaller and lighter compressor that charges the tank and is capable of meeting the average compressed air flow rate for the intended use.

[0005] The air tank and the larger compressor that are typically required to meet the desired pressure and airflow levels substantially increase the weight and overall size of the compressor package. Units designed for high pressure and high volume tasks can rapidly reach a weight and size where the well-known motor vehicle mounted or towed trailer configuration is the only practical form. Still, there are a range of intermediate capacity air compressors that are common tools around the construction site and which are man portable.

[0006] Current models of man portable air compressor packages comprise a stand or supporting structure on or in which are mounted a motor or engine, an air compressor, an air tank, a discharge manifold and various valves, instrumentation and controls. Many of the larger portable configurations are provided with wheels, in what is often referred to as a wheelbarrow configuration, so that they can be moved by a single user. Examples of wheeled air compressors include Models D55170 and D55270, which are marketed by DeWalt.

[0007] Still, some users of intermediate capacity professional grade compressors find it necessary or desirable to have a compressor that is capable of being lifted and carried by hand. One common approach taken by air compressor manufacturers to improve the portability of such intermediate capacity professional grade compressors has been to redesign the air compressor so as to reduce its weight. Despite such efforts, intermediate capacity professional grade compressors frequently weigh more than 50 pounds and thus remain difficult to lift and move by hand, even for those users who are physically strong.

[0008] Aside from the issue of their weight, hand-portable intermediate capacity professional grade compressors are also known to be quite cumbersome to transport. In this regard, the configurations that use two cylindrical tanks or a single pancake tank (i.e., a cylindrical tank of large diameter but small height with convex ends) have become common, as have the mounting schemes for mounting the compressor and the motor. For example,

configurations that use two cylindrical tanks typically mount the compressor and motor alongside the tanks, whereas configurations that use a single pancake tank typically mount the compressor and motor on an end of the tank.

[0009] These conventional air compressor arrangements provide a package with a relatively large base or footprint, and a center of gravity that is positioned in an approximately centered position within the footprint. While such arrangements provide the air compressor with a configuration that is relatively stable during its operation, lifting and carrying air compressors with these configurations tends to be rather awkward and difficult. In this regard, these configurations typically employ a handle (for lifting and carrying the air compressor) that is attached to an appropriate structure, such as the stand or the air tank, at a location that is located vertically above the center of gravity of the entire air compressor package. The handle is generally oriented in a manner that requires the air compressor package to be lifted vertically upwards and carried in an orientation that is substantially the same as the orientation in which it is operated.

[0010] Lifting and carrying the known intermediate air compressor packages in this manner, however, is relatively difficult, since the footprint of these air compressor packages tends to be relatively large and thus requires the user to hold the air compressor package with a somewhat outstretched arm such that the wrist of the user is in a state of flexion. In an effort to bring the air compressor package's center of gravity closer to the central axis of the user, the user will typically tilt their upper body away from the load of the air compressor

package and thus will lift and transport the air compressor package with a body posture that is uncomfortable and awkward.

SUMMARY OF THE INVENTION

[0011] In one form, the present invention provides an air compressor package having a compressor body and a handle. The compressor body has a mounting platform, a compressor, and an air tank in fluid communication with the compressor. The air tank has a generally cylindrically-shaped body. The mounting platform has a base member and a pair of side members that are coupled to the base member and which extend outwardly therefrom. The side members have an arcuate end surface that substantially conforms to a portion of a perimeter of the air tank when the base member is abutted against the air tank. The handle is coupled to the compressor body and configured to be grasped by a hand of a user of the air compressor package so that the air compressor package can be rotated about a horizontal axis between an operating position and a hand-carried transport position.

[0012] In another form, the present invention provides an air compressor package having a compressor body and a handle. The compressor body includes a base, a compressor and at least one air tank in fluid communication with the compressor. The compressor is an oil-less compressor having a piston that reciprocates along an axis. The compressor body is positionable in an operating position in which the compressor and the air tank are positioned generally horizontally so that the axis along which the piston reciprocates extends generally horizontally. The compressor body is also positionable in a transport position in

which one of the compressor and the air tank is positioned above the other one of the compressor and the air tank so that the axis along which the piston reciprocates extends generally vertically.

[0013] Further areas of applicability of the present invention will become apparent from the detailed description provided hereinafter. It should be understood that the detailed description and specific examples, while indicating the preferred embodiment of the invention, are intended for purposes of illustration only and are not intended to limit the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] Additional advantages and features of the present invention will become apparent from the subsequent description and the appended claims, taken in conjunction with the accompanying drawings, wherein:

[0015] Figure 1 is a perspective view of a compressor package constructed in accordance with the teachings of the prior art;

[0016] Figure 2 is a front view of a user transporting the compressor package of Figure 1;

[0017] Figure 3 is a perspective view of an air compressor package constructed in accordance with the teachings of the present invention;

[0018] Figure 4 is a left side elevational view of the air compressor package of Figure 3 as positioned in an operational position;

[0019] Figure 5 is a rear elevational view of the air compressor package of Figure 3;

[0020] Figure 6 is a bottom plan view of the air compressor package of Figure 3;

[0021] Figure 7 is a left side elevational view of the air compressor package of Figure 3 as positioned in a transport position;

[0022] Figure 8 is a perspective view of an air compressor package constructed in accordance with the teachings of an alternate embodiment of the present invention;

[0023] Figure 9 is a left side elevational view of the air compressor package of Figure 8 as positioned in a transport position;

[0024] Figure 10 is a perspective view of an air compressor package constructed in accordance with the teachings of another alternate embodiment of the present invention;

[0025] Figure 11 is a left side elevational view of an air compressor package constructed in accordance with the teachings of still another alternate embodiment of the present invention;

[0026] Figure 12 is a front perspective view of another air compressor package constructed in accordance with the teachings of the present invention;

[0027] Figure 13 is a rear perspective view of the air compressor package of Figure 12; and

[0028] Figure 14 is a left side elevation view of the air compressor package of Figure 12.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0029] With reference to Figures 1 and 2 of the drawings, a prior art air compressor package 1 is illustrated to include a support structure 2, a compressor mechanism 3, an air tank 4 and a handle 5. The compressor mechanism 3 and the air tank 4, which are among the heavier components of the air compressor package 1, are distributed horizontally about the support structure 2 such that the center of gravity 6 of the air compressor package 1 is disposed well within the interior of an area bounded by the support structure 2. The handle 5 is coupled to the support structure 2 in a manner that places a centerline 7 of the handle 5 vertically in-line with the center of gravity 6 of the air compressor package 1.

[0030] With additional reference to Figure 2, the configuration of the handle 5 is such that it permits the air compressor package 1 to be lifted vertically and transported in the same orientation as it is operated. The size of the footprint or base 8 of the air compressor package 1, however, is relatively large, which necessitates that the user 9 transport the air compressor package 1 with a somewhat outstretched arm 9a. Consequently, the user's wrist 9b is maintained in a state of flexion, which tends to be uncomfortable for the user and fatiguing.

[0031] In Figures 3 through 5, an air compressor package constructed in accordance with the teachings of the present invention is generally indicated by reference numeral 10. The air compressor package 10 is illustrated to include a compressor mechanism 12, an air tank 14, a support structure 16, a handle 18

and a gauge package 20. The compressor mechanism 12 is conventional in its construction and operation and as such, need not be discussed in detail herein. Briefly, the compressor mechanism 12 includes a compressor 22, which is operable for intaking and compressing ambient air, and a power source, such as an electric motor 24 or an engine, for providing power to the compressor 22. The compressed air that exits the compressor 22 is discharged to the air tank 14, which serves as a reservoir for the compressed air.

[0032] The air tank 14 has a capacity of at least 0.5 gallons and in the particular example provided, is illustrated as having a single cylindrically shaped tank structure. The air tank 14, however, preferably has a capacity of about 1 to about 8 gallons, and more preferably a capacity of about 3 to about 5 gallons. Those skilled in the art will understand that the air tank 14 may be configured somewhat differently, as with a conventional pancake-style (i.e., a relatively short and large diameter cylinder with convex ends) tank structure (not shown) or with a plurality of cylindrically shaped tank structures that are coupled in fluid connection as shown in Figure 10.

[0033] The support structure 16 is illustrated to be configured in a "roll-cage" manner that extends around both the compressor mechanism 12 and the gauge package 20 to protect these components should the air compressor package 10 be overturned or impacted by another object. In the particular embodiment illustrated, the support structure 16 includes a tubular frame 30 having opposite laterally extending sides 32 that are interconnected by a mounting platform 34 and a plurality of strut members 36, as well as an optional

shield or cover 38. In the example provided, the cover 38 is formed from a sheet material, such as steel, aluminum or plastic, and is removably fastened with, for example, conventional threaded fasteners (not shown) to the tubular frame 30. While the primary purpose of the cover 38 is to protect components such as the compressor mechanism 12 and the gauge package 20 from damaging contact with, for example, falling tools and workpieces, those skilled in the art will understand that the relatively smooth outer surface of the cover 38, when abutted against the lateral side of the user during transport, is relatively more comfortable and less likely to interfere with the movement of the user as compared to the tubular frame 30, the compressor mechanism, the air tank 14 and/or the gauge package 20.

[0034] In the example provided, the laterally extending sides 32 are constructed in an open manner, such that the ends 42 of the laterally extending sides 32 do not intersect one another but rather intersect the air tank 14. The ends 42 are coupled to the air tank 14 through a conventional coupling means, such as welds. In the particular embodiment illustrated, the air tank 14 extends through the laterally extending sides 32 but those skilled in the art will understand that the air tank 14 could alternatively be configured to terminate flush or inboard of the laterally extending sides 32 so that the support structure 16 would also protect the opposite ends of the air tank 14. The gauge package 20, which conventionally includes an air tank pressure gauge 46, a regulator 48, a regulator gauge 50 and an outlet manifold 52, is coupled to a gauge panel 54 that is mounted between the laterally extending sides 32 of the support structure 16.

The gauge panel 54 may be a discrete component or may be integrally formed with the cover 38. Preferably, the gauge panel 54 is mounted in a rearwardly sloped orientation, which is best illustrated in Figures 3 and 4, as opposed to the substantially vertical orientation that is illustrated in the prior art air compressor package 1 of Figure 1, so as to position the air tank pressure gauge 46, the regulator 48, the regulator gauge 50 and the outlet manifold 52 in a manner that is relatively more comfortable for the user of the air compressor package 10 to read and/or access. As those skilled in the art will appreciate from this disclosure, the improved readability of the air tank pressure gauge 46 and the regulator gauge 50 and the improved accessibility of the regulator 48 that result from the positioning of the gauge panel 54 in a rearwardly sloped orientation improves the accuracy with which the user is able to control the air pressure that is delivered to the outlet manifold 52. Pegs 58, which are coupled to one of the laterally extending sides 32 and extend outwardly therefrom, are optionally provided so as to permit items, such as a power cord 60 or an air hose 62, to be coiled (around the pegs 58) for storage.

[0035] The mounting platform 34, which is illustrated to be fabricated from a sheet material, such as steel, aluminum or plastic, serves as the base 66 of the support structure 16. The compressor mechanism 12 is coupled to the mounting platform 34 via a plurality of threaded fasteners (not specifically shown). A plurality of rubber feet 68 are affixed to the corners of the mounting platform 34 and serve to dampen vibrations that are transmitted through the support structure 16 as well as to provide the support structure 16 with a degree of skid resistance.

With specific reference to Figure 6, an access aperture 70 is formed through the mounting platform 34 and permits the user to access a valve mechanism 72 to manually drain the air tank 14.

[0036] With renewed reference to Figure 4, those skilled in the art will appreciate that the air tank 14 and the compressor mechanism 12 are coupled to the support structure 16 such that their centers of gravity, CG_{AT} and CG_{AC}, respectively, are positioned relatively close to the base 66 when the air compressor package 10 is oriented in its operational position (Figures 3 through 5). As the air tank 14 and the compressor mechanism 12 account for a majority of the weight of the air compressor package 10, configuration in this manner is advantageous in that it provides the air compressor package 10 with a relatively low center of gravity CG_{ACP}. As those skilled in the art will understand, the center of gravity CG_{ACP} acts along a plane 80 that is skewed to the base 66. In the particular embodiment illustrated, the plane 80 is substantially perpendicular to the base 66 since the base 66 is situated on a flat surface 82, such as a floor.

[0037] With reference to Figures 3 and 7, the handle 18 is configured to be gripped by a palmar surface 90 of the hand 92 of a user 94 when the user 94 is transporting the air compressor package 10. The handle 18 may be of any type and may be mounted to any appropriate structure, such as the support structure 16 or the air tank 14. In the particular embodiment illustrated, the handle 18 is fixedly mounted to air tank 14 and includes a grip portion 96 that is contoured to receive the fingers of the user when the user is transporting the air compressor package 10. The grip portion 96 is formed about a centerline 98 that lies in (or is

positionable into) a plane 100 that includes the center of gravity CG_{ACP} of the air compressor package 10.

[0038] The handle 18 permits the user of the air compressor package 10 to reposition the air compressor package 10 from the operational position that is illustrated in Figure 4 to a transport position that is illustrated in Figure 7. When positioned in the transport position, the plane 100 that includes the centerline 98 of the handle 18 and the center of gravity CG_{ACP} of the air compressor package 10 is located in a substantially vertical orientation that is generally parallel to a vertical (longitudinal) axis 104 of the user 94, as well as generally parallel to the base 66 and the top 108 of the air compressor package 10.

[0039] Furthermore, since the center of gravity CG_{ACP} of the air compressor package 10 is relatively close to the base 66 when the air compressor package 10 is oriented in the operational position, the user 94 is able to transport the air compressor package 10 such that the base 66 is proximate a lateral side 110 of the user 94 (i.e., within about 10 inches of the lateral side 110, and preferably about 3 inches to about 7 inches) and the user's wrist 112 is not in a state of flexion. When placed in the transport position, the air compressor package 10 is preferably configured such that the centers of gravity CG_{AT} and CG_{AC} of the air tank 14 and the compressor mechanism 12 are disposed in the plane 100, or oppositely offset therefrom by substantially equal distances. With the handle 18 thus positioned, the user 94 is able to comfortably carry the air compressor package 10, as well as to easily pivot the air compressor package 10

between the operational position and the transport position without releasing the handle 18.

[0040] While the air compressor package 10 has been described thus far as including an air tank 14 with a single cylindrically shaped tank structure and a handle 18 that is fixedly coupled to the air tank 14, those skilled in the art will appreciate that the invention, in its broader aspects, may be constructed somewhat differently. For example, the handle 18a may be incorporated into the support structure 16a as illustrated in Figures 8 and 9. In this embodiment, the support structure 16 extends around the air tank 14 on a side opposite the compressor mechanism 12 and upwardly from the base 66. A grip structure 96a is formed on the front strut member 36a that interconnects the opposite laterally extending sides 32a. Like the handle 18 of the air compressor package 10 that is illustrated in Figure 3, the handle 18a is positioned such that a centerline 98a of the grip structure 96a is positioned in a plane that contains the center of gravity CG_{ACP} of the air compressor package 10a when the air compressor package 10a is positioned in the transport position.

[0041] In the arrangement of Figure 10, the handle 18a is similar to that of the embodiment of Figure 8 in that it is incorporated with the support structure 16a. The air tank 14b, however, includes first and second generally cylindrical tank structures 150a and 150b which are stacked vertically relative to one another when the air compressor package 10b is placed in the operating position. In the arrangement illustrated, the first and second generally cylindrical tank structures 150a and 150b are disposed equidistantly on opposite sides of

the plane (not specifically shown) that includes the centerline 98a of the handle 18a and the center of gravity CG_{ACP}. The longitudinal axes 152a and 152b of first and second generally cylindrical tank structures 150a and 150b, respectively, are illustrated to contained in a plane that is skewed to the base 66 to thereby minimize the amount by which the first and second generally cylindrical tank structures 150a and 150b are offset from the plane that includes the centerline 98a of the handle 18a and the center of gravity CG_{ACP}. In this arrangement, the mounting platform 34b may be elevated slightly relative to the mounting platform 34 of the air compressor package 10 so as to more easily and compactly package the air tank 14b and the compressor mechanism 12 so that the centerline 98a of the handle 18a is positioned in the manner described above.

[0042] The arrangement of Figure 11 is generally similar to that of Figure 3, except that the handle 18c is pivotably coupled to the support structure 16c on a side opposite the air tank 14. When positioned into the transport position, the compressor mechanism 12 is situated above the air tank 14. This arrangement also illustrates that the air compressor package of the present invention may be rotated about a generally horizontal axis between the operational and transport positions in any direction. For example, the embodiment of Figures 6 and 7 illustrate that the air compressor package 10 may be rotated from the front F of the air compressor package 10 to the bottom B (or top T) of the air compressor package 10, whereas the embodiment of Figure 11 illustrates that the air compressor package 10c may be rotated from the rear R of the air compressor package 10c to the bottom B (or top T) of the air compressor package 10c.

Those skilled in the art will understand that the air compressor package may alternatively be configured to rotated from a side of the air compressor package to the bottom (or top) of the air compressor package via handle 18c.

[0043] With reference to Figures 12 and 13, another air compressor package constructed in accordance with the teachings of the present invention is generally indicated by reference numeral 10d. The air compressor package 10d is somewhat similar to the air compressor package 10 illustrated in Figure 3 and may include a compressor mechanism 12, an air tank 14, a support structure 16, a handle 18 and a gauge package 20. The compressor mechanism 12 may include an oil-less or oil-free compressor 22d and a power source, such as an electric motor 24 or an engine, for providing power to the oil-less compressor 22d. The oil-less compressor 22d includes a piston 300 that reciprocates along an axis 302 to intake and compress ambient air. The term oil-less is used herein to describe an air compressor that that does not use an liquid oil for lubrication of the piston 300 as it reciprocates. Preferably, the entire compressor 22d, including the crankcase (not shown), may be operated without a liquid lubricating oil. The compressed air that exits the compressor 22d is discharged to the air tank 14, which serves as a reservoir for the compressed air.

[0044] The air tank 14 may have a capacity of at least 0.5 gallons and in the particular example provided, is illustrated as having a single cylindrically shaped tank structure. The air tank 14, however, may have a capacity of about 1 to about 8 gallons, and more preferably a capacity of about 3 to about 5 gallons.

[0045] The support structure 16 may include a pair of tubular supports 30d and a mounting platform 34d. The mounting platform 34d may include a base member 310 and a pair of side members 312 that may be coupled to and extend outwardly from the base member 310. With additional reference to Figure 14, each side member 312 may include an arcuate end surface 314 that is configured to abut a portion of the perimeter of the air tank 14 when the base member 310 is abutted against the air tank 14. While the base member 310 may be abutted against the air tank 14 at any location in the lower quadrant 320 of the air tank, an upper surface 322 of the base member 310 may be positioned such that it is generally parallel to a first plane 324 that extends longitudinally through and bisects the air tank 14 and an edge 326 of the base member 310 terminates at a point that is included in a second plane 328 that is generally perpendicular to the first plane 324 and which extends longitudinally through and bisects the air tank 14. Configuration in this manner positions a center of gravity of the air tank 14 (i.e., CG_{AT}) relatively close to the base member 310 and prevents the air tank 14 from extending below the mounting platform 34d. Those of ordinary skill in the art will appreciate that exact alignment of the edge 326 to the plane 328 cannot be reliably accomplished on a mass-production basis and as such, it will be understood for the purposes of this disclosure and the appended claims that the edge 326 is positioned in the plane 328 when a deviation between the edge 326 and the plane 328 is less than or equal to 0.25 inch (i.e., 0.25 inch on either side of the plane 328).

[0046] A first end of the tubular supports 30d may be coupled to the base member 310 and a second, opposite end of the tubular supports 30d may be coupled to the air tank 14. The tubular supports 30d are positioned on opposite sides of the compressor mechanism 12 to thereby protect the compressor mechanism 12 should the air compressor package 10d be overturned or impacted by another object.

[0047] In the example provided, a shroud 330, which may be formed from a sheet metal or plastic material, may be removably coupled to the support structure 16 and/or the compressor mechanism 12. While the primary purpose of the shroud 330 is to protect components such as the compressor mechanism 12 and the gauge package 20 from damaging contact with, for example, falling tools and workpieces, those skilled in the art will understand that the relatively smooth outer surface of the shroud 330, if abutted against the lateral side of the user during transport, is relatively more comfortable and less likely to interfere with the movement of the user as compared to other portions of the air compressor package 10d.

[0048] The gauge package 20 may conventionally include an air tank pressure gauge (not shown), a regulator (not shown), a regulator gauge (not shown) and an outlet manifold 52, and may be mounted to any convenient point, such as to the air tank 14, the support structure 16 or the compressor 22d.

[0049] The compressor mechanism 12 may be coupled to the mounting platform 34d via a plurality of threaded fasteners (not specifically shown). A plurality of rubber feet 68 may be affixed to the corners of the mounting platform

34d to dampen vibrations that are transmitted through the support structure 16 as well as to provide the support structure 16 with a degree of skid resistance. An access aperture (not specifically shown), similar to the access aperture 70 in Figure 6, may be formed through the mounting platform 34d to permit the user to access a valve mechanism 72 to manually drain the air tank 14.

[0050] With specific reference to Figure 14, the air tank 14 and the compressor mechanism 12 may be coupled to the support structure 16 such that their centers of gravity, CG_{AT} and CG_{AC}, respectively, are positioned relatively close to the base member 310. As the air tank 14 and the compressor mechanism 12 account for a majority of the weight of the air compressor package 10d, configuration in this manner is advantageous in that it provides the air compressor package 10d with a center of gravity CG_{ACP} that is located relatively close to a surface onto which the air compressor package 10d has been placed, thereby rendering the air compressor package 10d relatively resistant to tipping.

[0051] The handle 18 may be of any type and may be mounted to any appropriate structure, such as the support structure 16 or the air tank 14. In the particular embodiment illustrated, the handle 18 is fixedly mounted to air tank 14 and includes a grip portion 96 (Fig. 12) that is contoured to receive the fingers of the user when the user is transporting the air compressor package 10d. The grip portion 96 (Fig. 12) is formed about a centerline 98 that lies in (or is positionable into) a plane (e.g., plane 324) that includes the center of gravity CG_{ACP} of the air compressor package 10d.

[0052] The handle 18 permits the user of the air compressor package 10d to reposition the air compressor package 10d from the operational position that is illustrated in Figure 14 to a transport position that is similar to that which is illustrated for the air compressor package 10 in Figure 7. In the transport position, the user may carry the air compressor package 10d with the lower surface of the base member 310 positioned proximate their lateral side or in the alternative, with the shroud 330 is positioned proximate their lateral side. In the particular example provided, the dimension between the first plane 324 and the tubular supports 30d is not equal to the dimension between the first plane 324 and the lower surface of the base member 310. Construction in this manner permits the user to transport the air compressor package 10d in two distinct manners. Since the air tank 14 is placed directly onto the base member 310 of the mounting platform 34d, the center of gravity CG_{ACP} of the air compressor package 10d is relatively closer to the base member 310 as compared to the embodiments of Figures 3 through 11 and as such, some users will find the air compressor package 10d more easy to transport than the air compressor package 10 of Figure 3, since this configuration permits the air compressor package 10d to be transported relatively closer to the lateral side of a user.

[0053] As will be apparent to one of ordinary skill in the art in light of this disclosure, placement of the air compressor package 10d in the operating position places the axis 302 along which the piston 300 (Fig. 12) reciprocates in a generally horizontally orientation, while placement of the air compressor package 10d in the transport position places the axis 302 in a generally vertical orientation.

[0054] While the invention has been described in the specification and illustrated in the drawings with reference to a preferred embodiment, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention as defined in the claims. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiment illustrated by the drawings and described in the specification as the best mode presently contemplated for carrying out this invention, but that the invention will include any embodiments falling within the foregoing description and the appended claims.